Using VanillaDB

Database Systems DataLab, CS, NTHU Spring, 2024



Simple, fast, and extensible database system prototypes.

Projects

- There are 3 projects in VanillaDB
 - Single-server DBMS: VanillaCore
 - Benchmarking: VanillaBench
 - Communication module for distributed DBMSs: VanillaComm

Outline

- VanillaCore
 - Prepare Everything You Need
 - Server Properties
 - Starting Up VanillaCore
 - Console SQL Interpreter

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- JDK 17
 - <u>https://www.oracle.com/java/technologies/javase/j</u>
 <u>dk17-archive-downloads.html</u>
- VS Code
 - <u>https://code.visualstudio.com/</u>

- VS Code
 - First open VScode and go to market



• VS Code

search for java

install all of these



- VS Code
 - when installation completed, open a new window and stand by.



Downloading The Project

- Clone VanillaDB here
 - <u>https://shwu10.cs.nthu.edu.tw/courses/databases/</u> 2024-spring/vanilladb

How to Import VanillaCore



Choose vanilladb to be your workspace

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Do not select 'core-patch' as the workspace! choose 'vanilladb' where core-patch is inside!

Done



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VanillaCore Properties File



 Configurations for VanillaCore are all stored in a properties file

VanillaCore Properties



vanilladb.properties

≡ vanilladb.properties ×				
core-p	atch > src > main > resources > org > vanilladb > core > 🗧 vanilladb.properties			
24				
25				
26				
27	# File package settings			
28				
29				
30	# The number of bytes in a block. A common value is 4K.			
31	org.vanilladb.core.storage.file.Page.BLOCK_SIZE=4096			
32	# The parent directory of database files.			
33	org.vanilladb.core.storage.file.FileMgr.DB_FILES_DIR=			
34	# The directory of log files.			
35	org.vanilladb.core.storage.file.FileMgr.LOG_FILES_DIR=			
36	org.vanilladb.core.storage.file.io.IoAllocator.USE_0_DIRECT=false			
37				
38				
39				
40	# Butter package settings			
41	THE REPORT OF A DECEMBER OF			
42	with a state state for state a buffer original solution to the			
43	# The maximum walling time for pinning a buffer Mar Max TIME 10000			
44 AC	# The ensiles value for tuning waiting time			
45	<pre>m file epsition value for culling waiting time. ong vanilladh core storage huffer BufferMan EDCTLON-EQ</pre>			
40	# The size of huffer nool			
47	arg vanilladh core storage huffer RufferMar RUFFER DOOL ST7E-1024			
49				
50				
51	#			
52	# Log package settings			
53				
54				
55	# The name of vanilladb's log file.			
56	org.vanilladb.core.storage.log.LogMgr.LOG_FILE=vanilladb.log			
57				
58				
59				
60	# Concurrency package settings			
61				
62				
63	# The maximum waiting time for lock. Original value is 10 seconds.			
64	org.vanilladb.core.storage.tx.concurrency.LockTable.MAX_TIME=10000			
65	# The epsilon value for tuning waiting time.			
66	org.vanilladb.core.storage.tx.concurrency.LockTable.EPSILON=50			
67				

vanilladb.properties



Example of windows path: C:\\Users\\XXXX\\Downloads\\vanilladb

- Your DataBase files will be stored in this directory
- If it is empty, the Default directory would be your User directory

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Starting Up VanillaCore



- To start up a VanillaCore server, we have to give it the following arguments
 - Database Directory Name
 - The locations of properties files

Setting Run Configuration

× 1 F	ile Edit Selection View Go Run 1
Û	RUN AND DEBUG: RUN ···
Q	Open a file which can be debugged or run.
ze	Run and Debug
a ₿	To customize Run and Debug create a launch.json file.
₿	Show all automatic debug configurations.
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	Java					
	Node.j	S				
	Web A	pp (Chrome)				
	Web App (Edge)					
	Install	an extension for Java Properties				

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✓ TEST [] EŢ C > .metadata ✓ .vscode {} launch.json > bench ✓ core-patch) () () () () () () () () () () () () () (<pre>.vscode > {} launch.json > [] configurations > {} 0 1 { 2 // Use IntelliSense to learn about possible attributes. 3 // Hover to view descriptions of existing attributes. 4 // For more information, visit: https://go.microsoft.com/fwlink/?linkid=830387 5 "version": "0.2.0", 6 "configurations": [</pre>
 settings repo src main java resources java \ util \ logging E logging.properties org \ vanilladb \ core E vanilladb.properties test target classnath 	•	<pre>7 8 9 "type": "java", 9 10 "request": "launch", 11 12 13 4 "type": "java", 15 name": "App", 16 request": "launch", 17 mainClass": "org.vanilladb.bench.App", 18 19 }, 20 4 Turne": "item" auto generated content </pre>



open our launch.json

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5	"version":	"0.2.0",	
6	"configura	ations": [
7			
8	"t	type": "java",	Bo-Cheng Yang, 22 ho
9	"r	name": "Start Be	nchmark Server",
10		request": "launc	h",
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Arguments (1/2)

- Program Arguments
 - Format

[Database Directory Name]

• Example

student-db

Arguments (2/2)

- VM Arguments
 - For logging properties

-Djava.util.logging.config.file=target/classes/java/util/logging/logging.properties

• For VanillaCore properties

-Dorg.vanilladb.core.config.file=target/classes/org/vanilladb/core/vanilladb.properties



You can copy those arguments from <u>here</u>, then hit 'Apply' and 'Run'

d D	RUN AN D	Start Core 🗸 🚳 …	刘 File Ed	it Selection	View Go	Run Terminal Help	
ىي	V VARIABLES	Start Core Server	RUN	AN 🕨 Star	t Core 🗸 🕴	Start Debugging	F5
0		ConsoleSQLInterpreter	└ ✓ VARI	ABLES		Run Without Debugging	Ctrl+F5
~			Q			Stop Debugging	Shift+F5
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						New Breakpoint	>
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select startup and run without debugging!

Server Messages (1/3)

+ ~ ... ~

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL GITLENS

	Powershell
- 善賞試新的跨平台 DowerShell https://aka.ms/pscope6	🐼 Run: StartU
in E HAWING TE FOWER Shell Helps. // aka.ins/ pscoreo	
PS C:\Users\USER\master\2024gitlab\vanilladb> & 'C:\Program Files\Java\jdk-17\bin\java.exe' '@C:\Users\USER\AppData\Local\Temp\cp_52b17tz5scrsxbs29ez0gfok4.argfile' 'org.vanilladb.core.server.StartUp' 'stud	
nt-DB'	
7月 26, 2023 2:35:02 下午 org.vanilladb.core.server.StartUp main	
INFO: initing	
7月 26, 2023 2:35:02 下午 org.vanilladb.core.util.PropertiesLoader getPropertyAsString	
WARNING: can't find property: org.vanilladb.core.storage.file.FileMgr.DB_FILES_DIR, using default value: C:\Users\USER	
7月 26, 2023 2:35:02 下午 org.vanilladb.core.util.PropertiesLoader getPropertyAsString	
WARNING: can't find property: org.vanilladb.core.storage.file.FileMgr.LOG_FILES_DIR, using default value: C:\Users\USER	
7月 26, 2023 2:35:02 下午 org.vanilladb.core.storage.file.FileMgr <init></init>	
INFO: block size 4096	
7月 26, 2023 2:35:02 下午 org.vanilladb.core.storage.tx.TransactionMgr createTransaction	
FINE: new transaction: 0	
7月 26, 2023 2:35:02 下午 org.vanilladb.core.server.VanillaDb init	
INFO: recovering existing database	
7月 26, 2023 2:35:02 下午 org.vanilladb.core.server.VanillaDb init	
INFO: the database has been recovered to a consistent state.	
7月 26, 2023 2:35:02 下午 org.vanilladb.core.storage.metadata.statistics.StatMgr <init></init>	
INFO: building statistics	
7月 26, 2023 2:35:02 下午 org.vanilladb.core.storage.metadata.statistics.StatMgr <init></init>	
INFO: the statistics is up to date.	
7月 26, 2023 2:35:02 下午 org.vanilladb.core.storage.tx.Transaction commit	
FINE: transaction 0 committed	
7月 26, 2023 2:35:02 下午 org.vanilladb.core.storage.tx.recovery.CheckpointTask createCheckpoint	
INFO: Start creating checkpoint	
7月 26, 2023 2:35:02 卜午 org.vanilladb.core.storage.tx.TransactionMgr createTransaction	
FINE: new transaction: 1	
7月 26, 2023 2:35:02 下午 org.vanilladb.core.storage.tx.Transaction commit	
FINE: transaction 1 committed	
7月 26, 2023 2:35:02 下午 org.van111adb.core.storage.tx.recovery.CheckpointTask createCheckpoint	
INFO: A checkpoint created	
7月 26, 2023 2:35:02 下十 org.van111adb.core.server.startUp main	
INFO: database server ready	

You should see this if there is nothing wrong.

Server Messages (2/3)



If you saw any 'Warning' message, you should check it carefully.

Server Messages (3/3)

- "error reading config file, using default "
 - It usually happens when you give a wrong location for a config file
- "can't find property:, using default: ..."
 - It means that there is a property missing in your config file

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Console SQL Interpreter



 You can use Console SQL Interpreter we provide in VanillaCore to connect with server

Console SQL Interpreter

- To use Console SQL Interpreter, just follow these steps
- 1.run server first!(mention above)
- 2.select "ConsoleSQLInterpreter"
- 3.run without debugging!
- 4.done





Try it !

🖹 Problems @ Javadoc 😟 Declaration 📮 Console 🛛 🛛 📮 🖉 🗮 🔛 💭 🛃 🛃 🖅 🛨 🖬 🗖						
console [Java Application] /Library/Java/JavaVirtualMachines/jdk1.7.0_45.jdk/Contents/Home/bin/java (2016年2月24日下午10:26:53)						
SQL> Create TABLE STAR_WARS (id INT , name VARCHAR(10) , force_power INT)						
0 records processed						
SQL> INSERT INTO STAR_WARS (id , name , force_power) VALUES (1 , 'Yoda' , 99999)						
1 records processed						
SQL> INSERT INTO STAR_WARS (id , name , force_power) VALUES (2 , 'BB-8' , 0)						
1 records processed						
SQL> INSERT INTO STAR_WARS (id , name , force_power) VALUES (3 , 'Rey' , 99)						
1 records processed						
SQL> SELECT id , name , force_power FROM STAR_WARS						
force_power id name						
99999 1 Yoda						
99 3 Rey						
SQL>						

A&O

- To see what exactly queries you can use, please check here
 - <u>https://shwu10.cs.nthu.edu.tw/courses/databases/2024-sp</u> <u>ring/faq/-/blob/master/Vanilladb_Sql.md</u>
 - If you got any problem, you can check here first
 - <u>https://shwu10.cs.nthu.edu.tw/courses/databases/2024-sp</u> <u>ring/faq</u>
 - If your problem was very unique, just send a email let us know